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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,039	11/02/2001	Wade Sonnenberg	50919	4377
21874	7590	12/02/2003	EXAMINER	
EDWARDS & ANGELL, LLP			OLSEN, KAJ K	
P.O. BOX 9169			ART UNIT	
BOSTON, MA 02209			PAPER NUMBER	

1753

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/002,039	Applicant(s) SONNENBERG ET AL.	
	Examiner Kaj Olsen	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>7/9</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Step a) of claim 1 calls for the determination of brightener by particular voltammetric methods. Although the limitation itself is definite, its location in the claim is confusing. In particular, what particular sample is this determining step drawn to? Step b) calls for the obtaining of plating baths having known levels of brightener. Are the levels known because of step a) or are they known because they were constructed with known concentrations of brightener? It would appear to the examiner that limitation a) only applies when an analysis is done of the plating bath having the unknown quantity of brightener and leveler (step e)). If that is the case, then limitation a) should be part of limitation e).
4. Claims 1, 5, and 9 all have an optional step 4 of the plating process. Although the use of an optional limitation is not indefinite *per se*, this particular limitation is confusing because later in each claim there is a limitation calling for a correlation using an output of either step 3 *or* 4. Hence it appears that the measuring portion of step 3 need not be performed if the measurement of step 4 is being utilized. However, the claims do not suggest that the measurement in step 3 is optional, only step 4. The way the claimed methods currently read, either the measurement of step 3 is performed or the measurements of both steps 3 *and* 4 are performed. If applicant

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wishes to have the claims read having a measurement of step 3 or 4, these limitations should be amended to specific that either one or the other step is performed.

5. Claim 1, step f) specifies that the correlation utilized the brightener determined by step a). However, step a) was never specified for use with the unknown plating bath. As the examiner suggested above, it would appear applicant should specify that step a) is performed on the unknown plating bath.

6. In claim 5, it is unclear what a "condition of steady state" is (a steady state of what?).

7. In claim 5, step k) is indefinite for the same reason step f) of claim 1 was indefinite. The claim never specified that step g) was ever performed on the plating bath having an unknown quantity of brightener and leveler.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonnenberg et al (USP 5,223,118) in view of Graham et al (USP 6,551,479 B1).

11. Sonnenberg discloses a method for determining the quantity of leveler in an electroplating bath comprising the steps of obtaining a plurality of plating baths where each bath has a known and different quantity of brightener and leveler, wherein the quantity of leveler in each bath differs from the quantity in the other baths (col. 8, lines 8-19). Sonnenberg further discloses providing a counter electrode, a working electrode and a reference electrode immersed in said bath where the working electrode is cleaned and oxidized at a fixed potential for a period of time (col. 4, lines 44-64 and col. 5, lines 46-54). Sonnenberg further teaches equilibrating said working electrode to absorb brightener according to a step selected from equilibrating without energy input for a time until the change in energy output with time is minimal and equilibrating for a set time at a fixed potential (col. 6, lines 25-40 and col. 7, lines 24-44). Sonnenberg further discloses plating metal ions for a time sufficient to measure the change in energy output with time (col. 7, lines 12-23) and correlating the quantity of leveler with the energy output value obtained in the plating (fig. 4 and col. 7, lines 12-23). Once this calibration has been established, the set forth technique can then be utilized for plating baths having unknown quantities of leveler and brightener (i.e. running bath) (col. 8, lines 8-45). Sonnenberg does not explicitly disclose the step of stripping the electrode. Graham discloses that an electrode should be stripped and cleaned subsequent to a plating step in order to prevent the interferences from affecting subsequent measurements (fig. 2 and 3 and col. 3, lines 1-53). It

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would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Graham for the method of Sonnenberg in order to prevent interferent contamination from affecting subsequent measurements. Sonnenberg also discloses that before the measurement of the leveling agent, a known quantity of brightening agent can be added to the plating bath (i.e. the bath should be diluted) to make the brightener solution more closely fit the calibration data (col. 7, lines 4-11).

Allowable Subject Matter

12. Claims 1-8 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

13. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not disclose nor render obvious all the limitations of claims 1 and 5 with particular attention to the steps of c) through g) of claim 1 (or steps h) through l) in claim 5) in conjunction with the step of determining the brightener by means of voltammetric stripping.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (703) 305-0506. The examiner can normally be reached on Monday through Thursday from 7:00 AM-4:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Mr. Nam Nguyen, can be reached at (703) 308-3322.

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When filing a fax in Group 1700, please indicate in the header "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of this application. This will expedite processing of your papers. The fax number for regular communications is (703) 305-3599 and the fax number for after-final communications is (703) 305-5408.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read 'Kaj K. Olsen', with a long horizontal flourish extending to the right.

Kaj K. Olsen
Patent Examiner
AU 1753

November 26, 2003